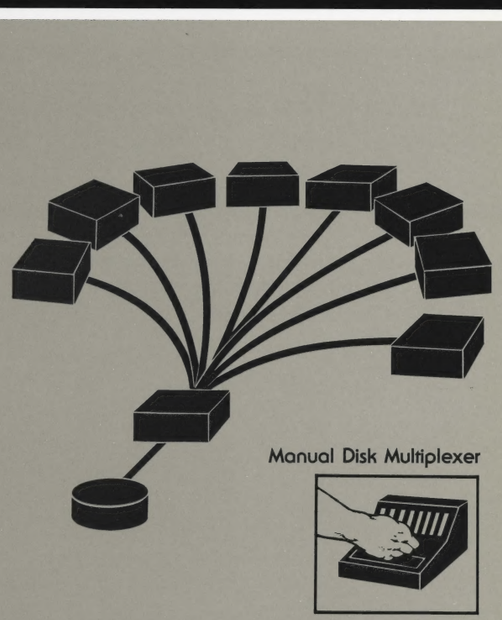
In 1978, a group of individuals highly skilled in state-of-the-art techniques for large computer systems and communication technology founded a company to apply those skills to the then-infant microcomputer industry. They designed, developed, manufactured and marketed a local computer networking system which takes advantage of the economy of established microcomputers while offering large system capabilities and technology.

The result is

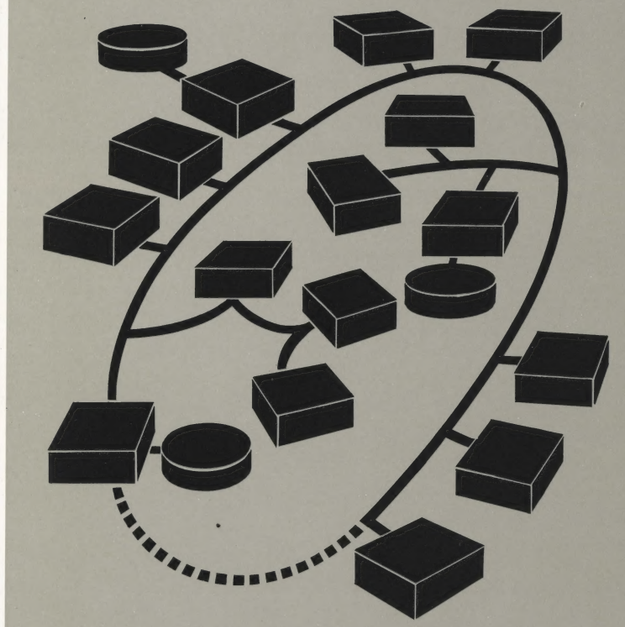
NESTAR

Local Networking with a Difference

This type of system uses a central multiplexer with a single source of mass storage. Access to the storage unit can be controlled by a microprocessor or by using a hand switch. As functions and users are added, a performance burden is created at one central point on the system — with no alternate pathway provided to users. Any failures to the switching mechanism involve all users on the system.

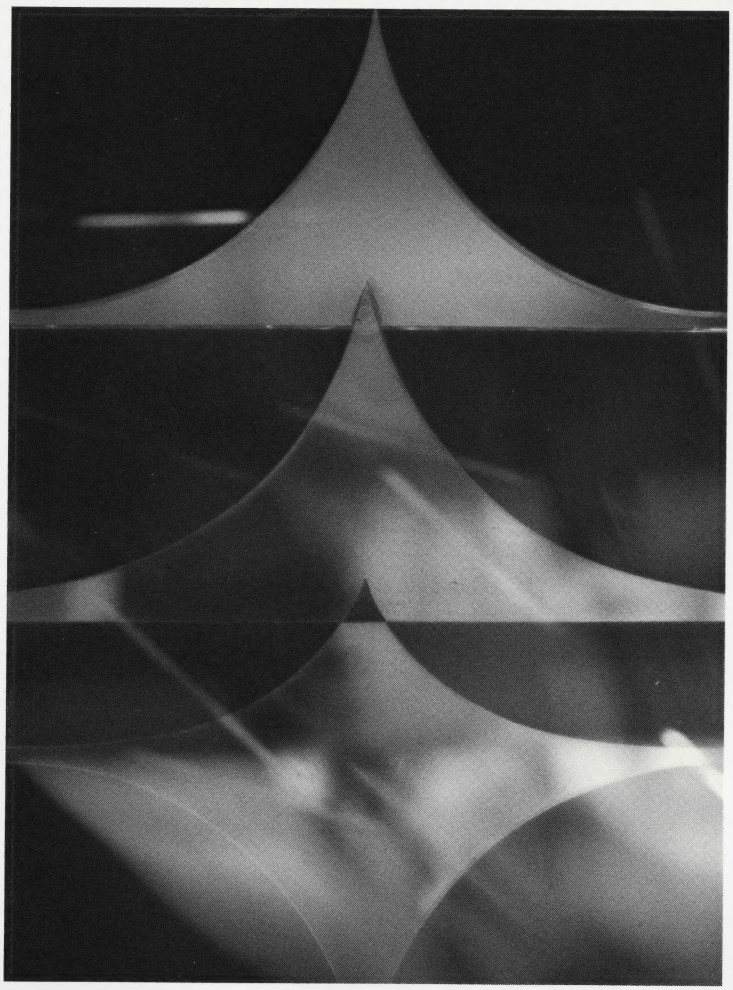


Typical Electronic Disk Multiplexer Network



NESTAR's Cluster/One Model A

This "ethernet-like" networking system allows direct station-to-station communications without going through a central storage device, or other station. By distributing control of the system over many components of the network, there is no centralized controller — virtually eliminating the chances of total network failure.



Cluster/One is a product of NESTAR, the company dedicated to bringing big system capabilities to the economical environment of microcomputers. NESTAR developed the first microcomputer cluster and today, NESTAR is an acknowledged leader in the field of local networking systems.

With Cluster/One, NESTAR offers the winning combination of sophisticated networking at affordable prices.

The difference is

NESTAR

NESTAR's Cluster/One Model A
Local Networking with a Difference

Overview

The Cluster/One Model A is a local computer network, ethernet-like in design, consisting of a combination of microcomputer stations and the NESTAR network. By enabling all users to share both equipment and information, the system is highly economical. With NESTAR software, stations can function as network servers, providing direct services such as shared disks and files, printers or modems to all other stations. Cluster/One offers unconstrained topologies, a flexible modular design and a broad range of server functions. It is local networking with

• economy • reliability • expandability

Network Elements

Topology

The Cluster/One Model A Network connects up to 65 microcomputers, currently Apples, on a single network. Stations are connected to the Network through a Nestar Network Interface Card and multi-wire cabling, for distances up to 1,000 feet. Virtually any topology may be used to suit your individual environment.

Shared Resources

All users benefit from server functions. The cost of expensive peripherals such as printers, modems or mass storage devices can be shared equally by all users on the Network.

Error Checking

All packet transmissions between stations are fully checked by the Network which automatically re-transmits if there is any error in the data.

Server Elements

Servers are any of the microcomputer stations which have been outfitted with a Nestar server function program, allowing them to provide direct services to all other stations on the Network. Commonly used servers are:

- File Server (shared disk files)
- Print Server (spooled printing)
- Communications Server (remote terminal and mainframe access)
- Data Base Management Server
- File Transfer Server (transfers files within and between networks)

Shared Data

All information can be shared among users on the Network, and through a unique system of controls, stations can simultaneously update data bases while insuring that no other station is updating the same information.

File Security

Using the Network's Password Protection mechanism, data can be protected so that only one designated user or group of users has access to special files.

Expandability

Because of its modular design, CLUSTER/ONE provides expandability that allows today's budget to purchase tomorrow's computing power. Starting with as few as two stations, the Network can expand up to a maximum of 65 stations on a single network. Through the use of a Communications Server, multiple networks can be interconnected, both locally and at remote sites, providing further growth potential. The File Server function offers a wide range of storage capacities, from an entry-level 1.2 megabyte floppy disk to over 4 **Gigabytes** of hard disk storage (using multiple file servers). The Ethernet-like architecture of the CLUSTER/ONE allows special server functions to be added at any physical location on the Network at any time. Other specialized hardware and software functions can be integrated into the Network without causing obsolescence.

Compatibility

To create user or server stations on the CLUSTER/ONE Network, no modifications are necessary to the microcomputer. Simply by adding the Nestar software and hardware, a stand-alone Apple becomes a Network user or server station, conforming to all protocols of the very latest Apple Operating Systems: DOS 3.3 and Pascal 1.1. No reprogramming is necessary to use a wide range of programs written for the Apple. Local peripherals such as minidisks, lower cost printers or graphics tablets used by an individual Apple station can continue to be used without interference with or by the Network.

FLOPPY DISK SUBSYSTEM

- Formatted capacity (two drives): 1260 Kbytes.
- Media: 8" single density, double sided, soft sectored.
- Transfer rate: 250K bps into buffer, 83 msec average rotational latency, 6 msec per track seek time.
- Mechanical: 20" wide x 10" high x 19" deep; 92 lbs. All steel cabinet (white with black trim).
- Electrical: 105-125 VAC, 60 Hz, 200 watts maximum, 3 amp fuse. Other voltages available as options.
- Approvals: UL listed, Office Appliance and Business Equipment.
- Interface provided for installation in the Apple which is used as the Network File Server.

HARD DISK SUBSYSTEM

- Formatted capacity: 16.5 and 33 Mbytes each.
- Media: 14" Winchester technology.
- Transfer rate: 300K bps into buffer, 15 msec average rotational latency, 43 msec average seek time.
- Mechanical: 19" wide x 9" high x 29" deep, 110 lbs. All steel cabinet (white).
- Electrical: 100-115 VAC, 60 Hz, 425 watts maximum, circuit breaker protection. Other voltages available.
- Approvals: UL listed.
- Interface provided for installation in the Apple which is used as the Network File Server.

CLUSTERBUS NETWORK

- Cables: 16 wire flat cable (0.8" wide) with IDC pin connectors, or 15 wire round cable (0.37" diameter) with DB-15 connectors.
- Maximum number of stations per bus: 65.
- Network topology: unconstrained tree (e.g., daisy chain, star, or combinations). Each interface has two bus connectors and cable tees are available.
- Maximum total bus length: 1000 feet.
- Transfer rate: approximately 240K bps.
- Transfer protocol: packetized message blocks sent between any two stations.
- Reliability features: redundancy checks on all addresses and data, packet retransmission as necessary, timeouts to avoid lockups.

APPLE NETWORK INTERFACE

- Plugs into any unused Apple peripheral slot.
- Contains 1 Kbyte of RAM for transparent buffering, 2 Kbytes of ROM for network interface routines.
- Obeys standard conventions for sharing the C800 address space.
- Hardware comparator recognizes message addresses. Local address is set by a shunt on the interface card.
- Does not affect ClusterBus when powered off.
- Simulates an Apple disk controller to allow autoboot across the network.
- Compatible with local minidisks and peripherals which obey the standard conventions.

SOFTWARE SUPPORT

- User station communications provided in ROM on the interface card.
- User stations can run all Apple DOS or Apple Pascal systems and transparently access shared central files.
- The Network File Server runs the Nestar operating system which manages the system resources.
- Utility programs are provided for maintenance of disk subsystems. (Floppy disk formatting and testing, disk backup, etc.)
- Licensed programs are available for server functions.

Local Networking with a Difference

NESTAR

NESTAR Systems, Incorporated, 2585 East Bayshore Road, Palo Alto, California 94303 (415) 493-2223 TELEX: 171420 — NESTAR PLA

Rev. 1 — 3/81